THE DECLINE

of the

OF THE

BITUMINOUS COAL INDUSTRY

IN PENNSYLVANIA

Commonwealth of Pennsylvania

GREATER PENNSYLVANIA COUNCIL

Soft Coal No. 1

The Decline of the Bituminous Coal Industry in Pennsylvania

Contents

Preface

The more important facts and conclusions set forth in this bulletin may be briefly summarized as follows:

1. Coal is suffering from the keen competition of fuel oil, natural gas, and hydro-electric power. This competition has reduced coal's share of the total energy supply by 30 per cent since 1905. Oil has been coal's greatest competitor. Further losses to oil are not expected, but a further loss of market to natural gas is probable. (See pages 6 to 8)

2. The market for coal has also been reduced by increased efficiency in the use of fuel. Further economies in coal burning are anticipated. (See page 7)

3. Sixty-five thousand Pennsylvania miners lost their jobs between 1923 and 1930. (See page 16)

4. Total production of bituminous coal in the United States declined 195,000,000 tons from 1926 to 1931. (See page 10)

5. Pennsylvania's output dropped from 172,000,000 tons in 1923 to 97,000,000 tons in 1931, the first year since 1904 in which the state's production fell below 100,000,000 tons. Pennsylvania's share in the total output declined from 36 per cent in 1912 to 26 per cent in 1931. (See page 10)

6. Among the soft coal states, West Virginia, Virginia, and Kentucky alone increased their output during 1927-1931 over that during 1912-1916. West Virginia is now the leading soft-coal producing state. (See page 11)

7. Soft coal shipments to tidewater, lake cargo, and central freight association markets have been shifting for 20 years from northern to southern mines and railroads, with disastrous results for Pennsylvania operators, miners, and carriers. (See pages 16 to 20)

Harrisburg, Pa., July, 1932.

Greater Pennsylvania Council.

Introduction

The Greater Pennsylvania Council has developed this as the first of a series of reports describing the status of the bituminous coal industry in Pennsylvania and offering suggestions for its improvement. The purpose of the present study is to present a factual picture of trends in the condition of the industry. While many features of the soft coal situation are generally known, an effort is made here to bring the elements of the story together and to bring them up to date. This study forms the basis for a second report which will analyze freight rates on bituminous coal.

Rich natural resources, a strategic location, and intensive development combined to make Pennsylvania the "Industrial Titan of America." The thirty-second state in area, Pennsylvania ranks first in the value of its mineral products.

It is estimated that in normal times, annual production in the primary mineral industries of the state approximates more than $1,600,000,000; that they employ more than 600,000 people, or more than half the whole number gainfully employed in industry in Pennsylvania, and that their payrolls total more than $1,000,000,000.

The principal mineral product of the state in point of value is coal. Until 1927 Pennsylvania ranked first among the states in output of bituminous coal. Her soft coal output, with a value of $235,000,000 in 1928, amounted to almost 128 million tons. The capital invested in her bituminous coal properties in that year was $500,000,000.

In the pre-depression year 1928, 130,902 men were employed in 919 bituminous mines in Pennsylvania. They received a total compensation of $166,000,000. Upon the purchasing power of these miners depended not only their standard of living, but also the economic well-being of entire communities in the central and western sections of the state. Bituminous coal deposits, estimated at 44 billion short tons, exist in 29 counties. Of these reserves 10 billion tons are readily recoverable.

The position of soft coal mining in Pennsylvania in 1930, however, compared unfavorably with the condition of the industry in previous years. With the exception of capital invested, all the indices by which the activity of the industry is measured —value of products, number of mines, total employees, total compensation, and tons produced— began to register declines after 1923, six years before depression descended along the whole industrial front. The following table shows the extent of this decline:

BITUMINOUS COAL INDUSTRY IN PENNSYLVANIA

	1923	1930
Value of Products	$453,003,200	$209,274,300
Capital Invested ..	443,516,800	473,695,000
Number of Mines .	1,617	785
Total Employees ..	189,226	128,905
Total Compensation	314,807,100	140,982,700
Tons Produced	172,158,436	121,384,040

Soft coal production, meanwhile, has been making rapid strides in West Virginia, Virginia, and Kentucky where the development of rich deposits worked by low-paid labor resulted in remarkable gains. In 1927, 1928, and 1931, in fact, West Virginia displaced Pennsylvania as the greatest soft-coal producing state in point of tonnage output.

The decline in the pre-eminence of Pennsylvania among soft coal states and in the economic condition of the industry within the state is due to several circumstances. The principal of these are: (1) the competition of soft coal from southern fields which, encouraged by preferential freight rates, have been able to ship coal beyond the boundaries of their natural markets; (2) the competition of such other sources of energy as fuel oil, natural gas, and electric power; (3) increasing efficiency in coal burning and in the use of fuel; (4) over-development in mine capacity; (5) curtailment of demand as a result of the depression; and (6) lower production costs in southern fields.

Numerous remedies have been proposed in recent years for the recovery of Pennsylvania's position among the coal states and for stabilizing this unruly industry. Among such proposals, a revision of the freight rate structure would seem to hold the most promise for the industry in Pennsylvania.

In view of the critical condition of the bituminous industry in this state and in the hope of contributing to a satisfactory solution of its problems, the Greater Pennsylvania Council has prepared this series of analyses in bulletin form. This publication, the first of the series, describes the competitive position of soft coal in the United States and the competition between the industry in Pennsylvania and that in other states. The second bulletin will discuss the burdens imposed upon the soft coal industry by present freight rates, with particular reference to the paralyzing effect of the existing freight-rate structure up the industry in Pennsylvania in its competit with the industry in other areas. The third bu tin will contrast community costs, labor costs, ing conditions, and other similar factors wh now work to the disadvantage of the industry this state and in favor of its competitors. T series will also include a summary of propo remedies offered for the relief of the industry, gether with an analysis of such proposals from standpoint of the industry in Pennsylvania a with specific suggestions for the relief of the dustry in that area and in general.

Chapter I

COMPETITION BETWEEN COAL AND OTHER SOURCES OF ENERGY

A sound approach to an understanding of the conditions in the soft coal industry may be made (1) by getting a clear picture of the growth of its competing fuels which have made rapid strides during the past 15 years, and (2) by comparing the growth of soft coal production in other states with that in Pennsylvania. This chapter points out the chief features of the first of these conditions: the growth of competitive fuels. The utilization of energy from the three major competitors of coal, namely, oil, gas, and water power, has made pronounced inroads upon the field of demand for both anthracite and bituminous coal.

During the five-year period, 1901 to 1905, anthracite and bituminous coal were the source for approximately 89 per cent of the energy produced by mineral fuels and water power. In 1931 the coals furnished but 56.5 per cent of the total supply.

Chart I illustrates the shift in the supply of energy from coal to competitive fuels and water power.[1]

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[1] The figures compare coal with other sources of energy in terms of British thermal units. They are from reports of the United States Bureau of Mines, from which source many of the other data used in this bulletin were obtained.

CHART I

RELATIVE SUPPLY OF ENERGY FROM VARIOUS SOURCES

1901-05   1931
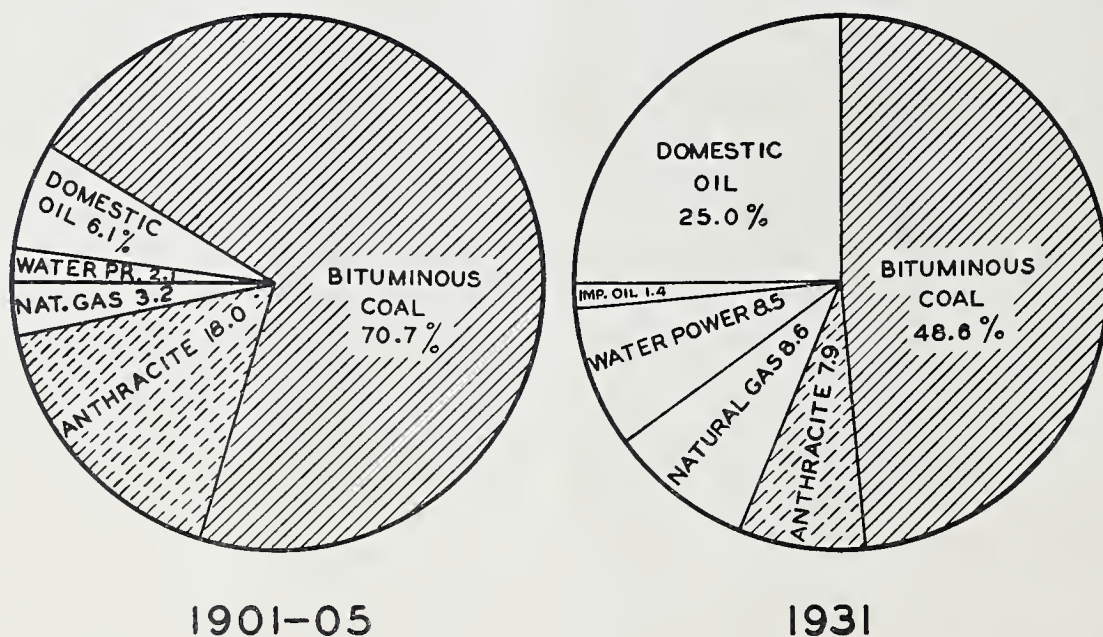
Fuel Oil Consumption

Chart I indicates that oil furnished 6.1 per cent of the total energy from all sources during 1901-1905, compared with 26.4 per cent in 1931. Approximately 110 million barrels of fuel oil were consumed in the Middle Atlantic and New England states during 1929, the latest year for which these data were available. This supply of energy is equivalent to approximately 23 million tons of bituminous coal. The total consumption of oil for domestic heating purposes in 1929 amounted to 19.6 million barrels and in 1930 to 25.4 million barrels. These figures represent a gain in 1930 of 29.6 per cent over 1929 and of 405.1 per cent over 1924. In addition 17.3 million barrels were used in 1930 for commercial heating in apartment houses, hotels, schools, and hospitals.

The first record of fuel oil consumption is contained in the United States census of 1899, which reported 11 million barrels used as fuel. Since that year, the rate of increase has been so rapid that consumption reached 75 million barrels in 1909, 210 million in 1919, 339 million in 1925, and 370 million in 1929. In terms of its equivalent in coal, these totals represent a decrease in the potential demand for coal which rises from 20 million tons in 1909 to more than 100 million tons in 1929.[1]

Consumption of Electricity and Natural Gas

While oil has made the greatest progress in its competition with coal for fuel purposes, water power and natural gas have also gained ground as sources of energy.

During the period 1901-1905, water power was the source of 2.1 per cent of the total energy supply as compared with 8.4 per cent in 1931. The electric energy developed by water power in the United States increased from about 16 billion kilowatt hours in 1920 to more than 32 billion kilowatt hours in 1930. In New England and the Middle Atlantic states the increase was from 4.8 billion to 8.3 billion kilowatt hours. Assuming that it takes one and one-half pounds of coal to produce one kilowatt hour, hydro-electric power in the Middle Atlantic and New England territory displaced in 1930 an equivalent of 6.2 million tons of coal.

Natural gas is a growing competitor of coal and other fuels. Its competition is becoming aggressive particularly in the northwest section of the Middle Atlantic area, in northern Ohio and south-

[1] *The Competitive Position of Coal in the United States*, National Industrial Conference Board (1931), p. 28.

ern Michigan, and in the Chicago and Minneapolis territories.

The strength of this newcomer in the fuel market is seen in the steady growth in the amount of natural gas produced and utilized during the last 10 years. In 1921 the natural gas produced and delivered to consumers in the United States amounted to 662 billion cubic feet. By 1930 this total had increased to 1,943 billion cubic feet, an increase of 194 per cent during the decade in gas delivered to consumers, and an increase of 138 per cent in total value at points of consumption. Of the total amount of natural gas produced in 1930, 19 per cent was consumed domestically, and 81 per cent was used for industrial purposes.

In 1913 coal was the source of 84.3 per cent of the total supply of energy. In 1931 its share of the total had dropped to 56.5 per cent. During the same interval the share of bituminous coal declined from 70.3 per cent to 48.6 per cent. The proportion of domestic oil in the total energy supply rose, meanwhile, from 8.3 per cent in 1913 to 25.0 per cent in 1931; natural gas advanced from 3.5 per cent to 8.6 per cent; and water power increased from 3.3 per cent to 8.5 per cent.
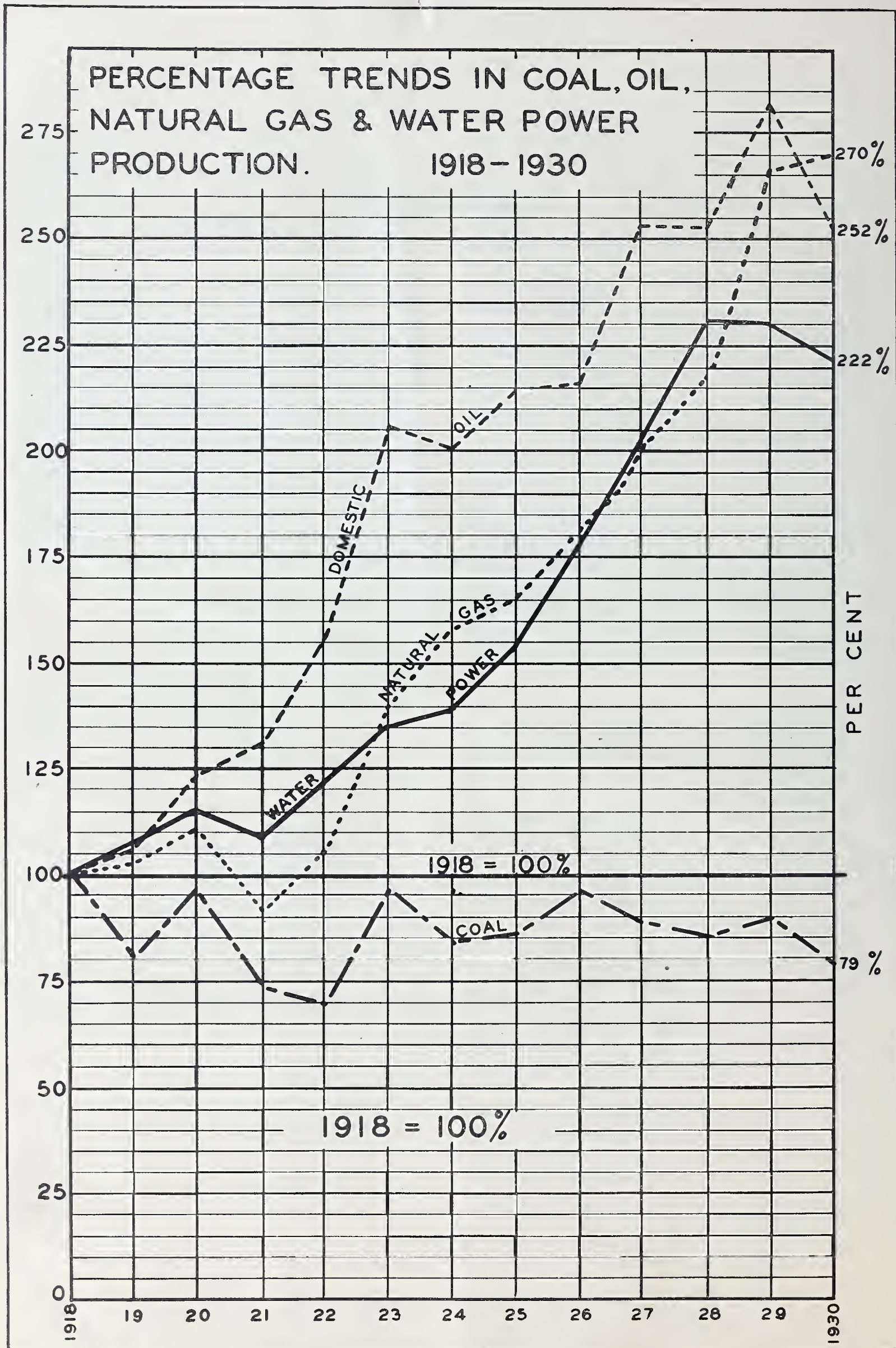
Loss In Tonnage to Competitors

If the average volume of energy derived from mineral fuels (including coal) and water power annually during the period 1911-1915 had been produced solely from bituminous coal, it would have required 638 million short tons. By 1930 it would have required 904 million short tons of soft coal. Despite this increase in fuel energy production, that of soft coal continues to decline.

A striking illustration of the relative growth of coal and competing sources of energy is given in Chart II. Using an index of 100 as equivalent to the energy-values of the coal, oil, natural gas, and water power produced in 1918, the chart illustrates the comparative production changes between 1918 and 1930. It will be seen that coal production in 1930 was 79 per cent of that in 1918; domestic oil production was 252 per cent; natural gas 270 per cent; and water power 222 per cent of the 1918 rate.

Increased Efficiency in the Use of Coal

A marked improvement in efficiency has occurred in the use of coal for the production of electricity by power plants. Such production has increased much more rapidly than the corresponding fuel consumption. It is estimated that increased efficiency in the use of fuel by electric power plants

CHART II

PERCENTAGE TRENDS IN COAL, OIL, NATURAL GAS & WATER POWER PRODUCTION.   1918–1930

1918 = 100%

1918 = 100%

PER CENT

is costing the coal industry upwards of $100,000,000 a year.

The railroads have materially reduced their fuel consumption per thousand gross ton-miles of freight hauled. Other industries have demonstrated similar efficiencies. The greater efficiency in burning coal cannot and should not be checked, but the bituminous coal industry itself claims considerable credit for these economies. The coal producer, at great cost, has installed plant and equipment which improves the quality of his output and thus benefits all consumers.

Effect on Labor

Technological improvements in the process of producing coal, the growing competition of substitute fuels, wage reductions, part-time work, and the persistence of the depression have combined to reduce soft coal miners to a condition which requires immediate relief measures and planning for the improvement of labor standards. The social results of their economic condition—strikes, evictions, degraded living conditions, riots, and unrest—are too familiar to necessitate repetition here.

Chapter II

CHANGES IN BITUMINOUS PRODUCTION, EMPLOYMENT, AND SHIPMENTS

The coal industry and particularly the soft coal industry, as we saw in the foregoing chapter, has been suffering from the keen competition of other fuel producers. The purpose of this chapter is to point out the more significant changes which have occurred recently within the bituminous coal industry itself.

The outstanding changes in the bituminous coal industry of interest here have been: (1) the relative decline in the total production of bituminous coal in the United States; (2) Pennsylvania's loss of first place among the soft-coal producing states; (3) the rise of West Virginia and Kentucky as producers of soft coal; (4) the labor trend; and (5) the shift in soft coal shipments from northern to southern railroads. These developments will be briefly described.

Decline of Soft Coal Production

While the production of fuels competing with coal has increased rather consistently during the past 20 years, bituminous coal production has fluctuated up and down. A glance at Table 1 shows that the total production of bituminous coal in the United States stood at 450 million tons in 1912, rose during the war years to 579 million tons in 1918, fell to 416 million tons in the depression year 1921, recovered to an average of 510 million tons in the relatively prosperous years 1923-1926, and dropped off to a twenty-year low of 378 million tons in 1931. The five-year period, 1927-1931, witnessed a production decline of 64 million tons under the figure for the previous five-year period, 1922-1926.

TABLE 1

PRODUCTION OF BITUMINOUS COAL IN THE UNITED STATES

Year	Millions of tons	Year	Millions of tons
1912	450	1922	422
1913	478	1923	465
1914	423	1924	484
1915	443	1925	520
1916	503	1926	573
1917	552	1927	518
1918	579	1928	501
1919	466	1929	535
1920	569	1930	468
1921	416	1931	378

This same production tonnage shown by five-year periods is:

        1912-1916..........2,297,000,000 tons
        1917-1921..........2,582,000,000 tons
        1922-1926..........2,464,000,000 tons
        1927-1931..........2,400,000,000 tons

Production in Pennsylvania

Pennsylvania's share in the total production of bituminous coal fell off 10 per cent during the twenty-year period (1912-31 inclusive) under review. The state produced 36 per cent of the total in 1912, 31 per cent in the record year 1918, 27 per cent in 1922, and 26 per cent in 1931. In millions of tons, as Table 2 indicates, soft coal production in the Keystone State dropped steadily from 812 in the five-year period, 1912-1916, to 629 in the five years from 1927 to 1931, inclusive, a decline in the interval of 22.5 per cent in tons produced. Nineteen thirty-one was the first year since 1904 in which Pennsylvania's output of soft coal fell below 100 million tons.

TABLE 2

PRODUCTION OF BITUMINOUS COAL IN PENNSYLVANIA

Year	Millions of tons	Year	Millions of tons
1912	162	1922	113
1913	174	1923	172
1914	148	1924	131
1915	158	1925	137
1916	170	1926	153
1917	172	1927	133
1918	179	1928	131
1919	151	1929	144
1920	171	1930	124
1921	116	1931	97

Pennsylvania's production in five-year periods since 1912 has been as follows:

        1912-1916 .... 812,000,000 of tons
        1917-1921 .... 789,000,000 of tons
        1922-1926 .... 706,000,000 of tons
        1927-1931 .... 629,000,000 of tons

Production in Other States

Pennsylvania, to be sure, was not alone in her coal production loss. While our state's bituminous production was dropping 22.5 per cent, that of Illinois fell approximately 14 per cent, and that of Ohio declined approximately 32 per cent. Tennessee, Maryland, and Indiana—minor states in the soft coal picture—also registered declines.

TABLE 3

BITUMINOUS PRODUCTION BY SELECTED STATES

(In Millions of Tons by Five-year Periods)

State	1912-1916	1917-1921	1922-1926	1927-1931	Percentage 1927-1931 over 1912-1916
Pennsylvania ..	811	789	706	629	-22.4
Illinois	304	394	342	261	-14.1
Ohio	146	200	154	99	-32.2
West Virginia ..	373	418	556	638	71.0
Virginia	42	49	60	58	38.1
Kentucky	103	157	250	283	174.8
Tennessee	31	29	27	26	-16.1
Maryland	23	18	11	12	-47.8
Indiana	86	127	111	82	-4.7

These losses, as Table 3 shows, were the result of gains by producers in West Virginia, Virginia, and Kentucky. Between the periods 1912-1916 and 1927-1931 those states increased their bituminous production approximately 71 per cent, 38 per cent, and 175 per cent, respectively. They produced about 41 per cent of the total output during 1927-1931.

In the five years after 1926, West Virginia won first place among the soft-coal producing states, leading Pennsylvania by nine million tons.

Chart III shows the changes between the periods 1912-1916 and 1927-1931 in the portions of the total soft coal production supplied by eight selected states. It will be seen that Pennsylvania's share of the total fell from 42 per cent in 1912-1916 to 30 per cent in 1927-1931. West Virginia's share increased, meanwhile, from 19 per cent to 31 per cent, and Kentucky's share grew from 5 per cent to 14 per cent. The six other states included in this chart accounted for 34 per cent of the total in 1912-1916 as compared with 25 per cent in 1927-1931.

Chart IV shows the comparative growth or decline in bituminous coal production in five states by the five-year periods since 1912.

CHART III

PERCENTAGES OF
BITUMINOUS COAL PRODUCTION
IN SELECTED STATES
BY FIVE YEAR PERIODS

| 1912-16 | 1917-21 | 1922-26 | 1927-31 |
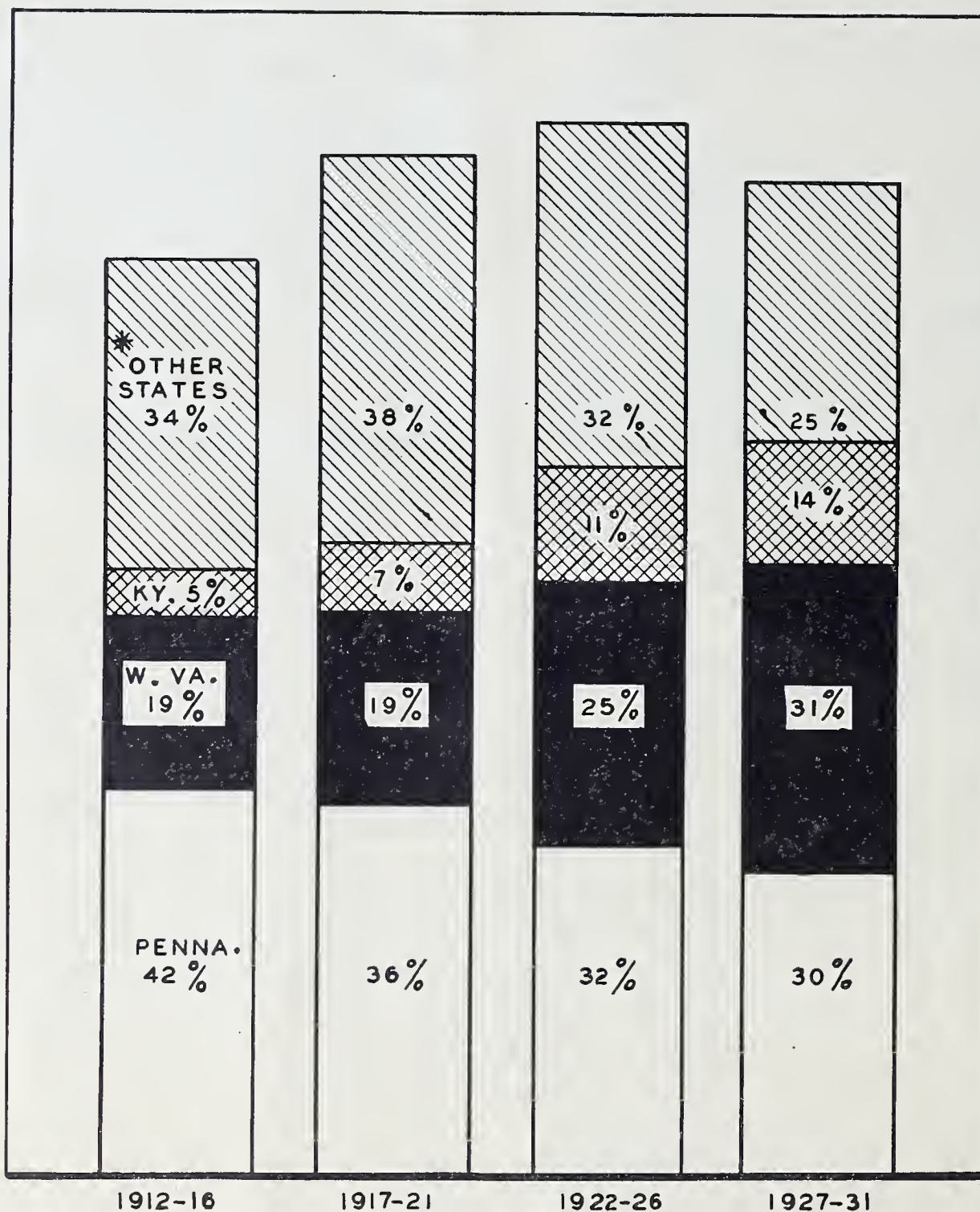
* OTHER STATES = ILLINOIS, OHIO, MARYLAND, TENNESSEE & VIRGINIA.
NOTE:— VARYING HEIGHTS OF COLUMNS SHOW RELATIVE PRODUCTION
FOR PERIODS NOTED.

(12)

CHART IV

BITUMINOUS PRODUCTION
IN SELECTED STATES
BY FIVE YEAR PERIODS

PENNSYLVANIA—
1912-1916
1917-1921
1922-1926
1927-1931

ILLINOIS—
1912-1916
1917-1921
1922-1926
1927-1931

OHIO—
1912-1916
1917-1921
1922-1926
1927-1931

KENTUCKY—
1912-1916
1917-1921
1922-1926
1927-1931

WEST VIRGINIA—
1912-1916
1917-1921
1922-1926
1927-1931
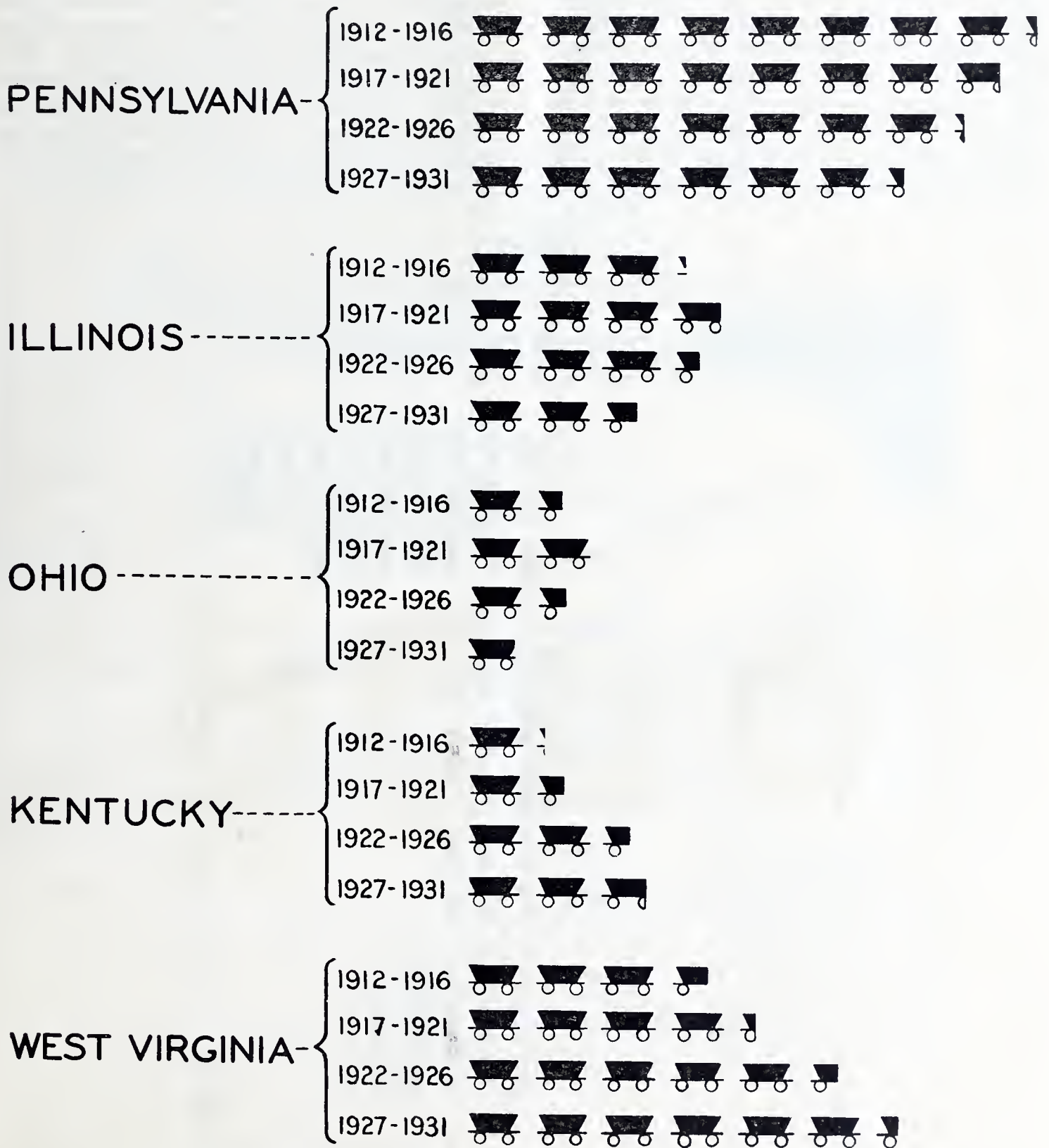
= 100,000,000 TONS

Employment Changes In Leading States: 1913-1929

The redistribution of soft coal production in Pennsylvania, West Virginia, and Kentucky has been accompanied by corresponding shifts in employment. Out of a total of 334,000 men employed in the bituminous mines of the Appalachian fields in 1913, 172,000 or 51 per cent, worked in Pennsylvania. In 1923, the year of peak employment, when 446,000 men had jobs in soft coal mines in those fields, 19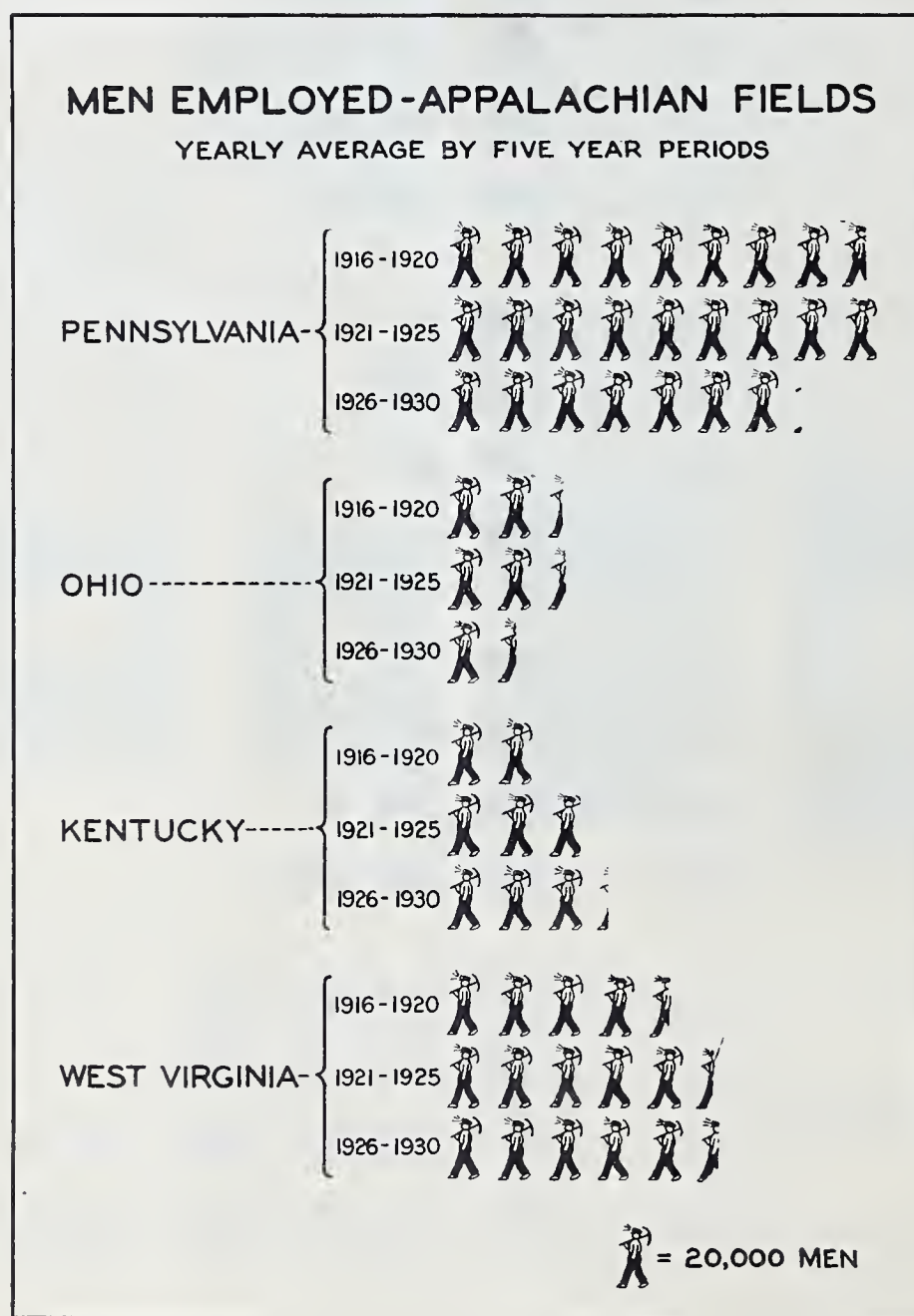5,000 or 44 per cent of the total, were at work in this state. By 1930, the most recent year for which the information is available, total employment in the six states of the region had dropped to 333,000, practically the 1913 level,

of whom only 130,000, or 39 per cent, were employed in Pennsylvania. In 17 years the Keystone State had thus lost 42,000 workers, or 24 per cent of its employment in 1913. It retained its traditional lead, however, as the first state in number of men employed in the soft coal industry.

During the same period, as shown by Table 4, employment in West Virginia and Kentucky mines increased steadily. Portions of this growth are portrayed graphically by charts V and VI. West Virginia's coal mines employed 31,000 more men during 1930 than in 1913; Kentucky mines employed 31,000 more. Between them, these two states accounted for 48 per cent of the total employment in the Appalachian coal fields in 1930.

CHART V

MEN EMPLOYED - APPALACHIAN FIELDS

YEARLY AVERAGE BY FIVE YEAR PERIODS

PENNSYLVANIA -
1916-1920
1921-1925
1926-1930

OHIO -
1916-1920
1921-1925
1926-1930

KENTUCKY -
1916-1920
1921-1925
1926-1930

WEST VIRGINIA -
1916-1920
1921-1925
1926-1930

= 20,000 MEN

CHART VI

EMPLOYMENT INCREASE & DECREASE
IN THREE PRINCIPAL COAL MINING STATES
1913—1929

PENNSYLVANIA

INCREASE OVER 1913

DECREASE UNDER 1913

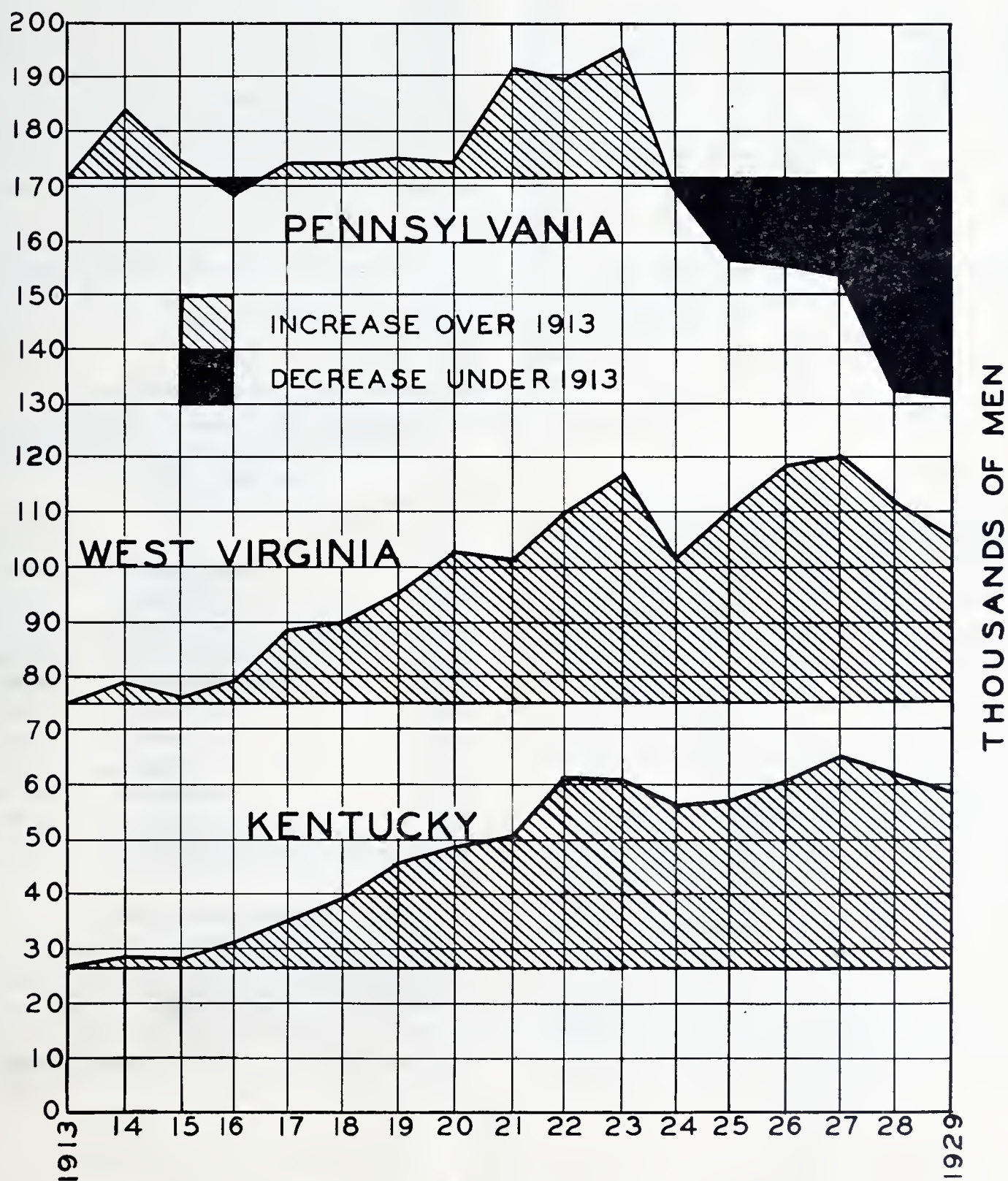WEST VIRGINIA

KENTUCKY

THOUSANDS OF MEN

TABLE 4

MEN EMPLOYED, APPALACHIAN FIELDS,
1913-1930 (In Thousands)

Year	Pennsylvania	Ohio	West Virginia	Virginia	Kentucky	Maryland	Total
1913 ...	172	46	75	9	26	5.6	334
1914 ...	184	45	79	9	29	5.4	351
1915 ...	175	40	76	9	28	5.7	336
1916 ...	168	41	78	10	31	5.6	334
1917 ...	174	46	88	11	35	5.9	360
1918 ...	174	48	90	11	39	5.6	368
1919 ...	175	50	95	12	46	5.4	383
1920 ...	174	51	103	14	49	5.5	396
1921 ...	191	32	102	12	51	4.7	412
1922 ...	189	34	110	13	61	3.8	431
1923 ...	195	55	117	14	61	3.7	446
1924 ...	169	44	102	13	56	3.8	388
1925 ...	157	40	110	14	57	3.6	382
1926 ...	156	39	119	14	61	3.7	393
1927 ...	154	36	120	13	65	3.5	391
1928 ...	133	21	112	12	62	3.3	343
1929 ...	132	25	105	12	59	3.3	336
1930 ...	130	26	106	12	57	3.3	334

The Shift in Soft Coal Shipments

Changes in the territorial distribution of production inevitably mean shifts in the shipment routings among the railroads which haul soft coal from the Appalachian area. There are eight main railroads serving this area, four northern roads and four southern. The northern group includes the Baltimore and Ohio, the Pennsylvania, the New York Central, and the Pittsburgh and Lake Erie. The southern group includes the Chesapeake and Ohio, the Louisville and Nashville, the Norfolk and Western, and the Virginian.

The chief markets to which coal is shipped via these lines are: (1) the Central Freight Association territory which embraces the area from Pittsburgh, Erie, and Buffalo on the east to Milwaukee and the Mississippi River on the west, and from the Great Lakes on the north to the Ohio River on the south; (2) the Lake Cargo Market which covers coal billed for part-rail and part-cargo shipments via the Great Lakes to destinations in the Northwest and Canada, from shipping points on the southern shore of Lake Erie; and (3) the tidewater markets which include destinations in New York, New England, and other points with the principal transfer terminals from rail to sea cargo at Hampton Roads, Baltimore, New York, and Philadelphia.

The Shift in Central Freight Association Consignments

It takes but a glance at Table 5 to realize what has taken place since 1919 in the shipment of soft coal from the Appalachian fields to the Central Freight Association market. Total shipments via northern roads to this market declined from 37.2 million tons in 1919 to 35.4 million tons in 1930, a drop of 4.8 per cent in 11 years. Meanwhile, total shipments via southern roads to this market rose from 30 million tons in 1919 to 57.6 million tons in 1930, an increase of 92 per cent during the period. In 1919 the northern roads carried 55 per cent of the soft coal to the Central Association territory. In 1930 they carried only 38 per cent. In other words, their percentage of the total had fallen 17 per cent during the 11-year period. All of the principal northern roads shared in this loss of traffic, while all of the southern roads increased their shipments enormously.

TABLE 5

TONNAGE SHIPPED TO CENTRAL
TERRITORY
1919-1930

Year	Northern Roads	Southern Roads
1919	37,225,000	30,080,000
1920	45,148,000	27,875,000
1921	31,268,000	27,185,000
1922	29,960,000	38,696,000
1923	43,727,000	46,253,000
1924	33,725,000	51,521,000
1925	34,283,000	61,308,000
1926	42,977,000	65,744,000
1927	38,434,000	70,855,000
1928	37,404,000	68,085,000
1929	42,080,000	70,453,000
1930	35,419,000	57,574,000

The Shift in Lake Cargo Shipments

Changes of great economic importance have likewise taken place in the points of origin of soft coal billed for Lake Cargo shipment. The shift shown in Table 6 presents a situation probably unparalleled in magnitude, swiftness, and in far-reaching significance.

Total shipments via northern roads to the Lake Cargo market increased from 13.2 million tons in 1909 to 14.4 million tons in 1929, a rise of only 9 per cent in 20 years. Meanwhile, total shipments via southern roads to this market rose from 2.2 million tons in 1909 to 23.4 million tons in 1929, a growth of 964 per cent during the period. In 1909 the northern roads carried 85.7 per cent of the total tonnage to the Lake Cargo market, while in 1929 they carried only 38.2 per cent. In other words, their share of the total had been more than cut in half during the twenty-year period.

When the Lake Cargo shipments are shown by states of origin, the geographical character of the shift is striking. It will be seen that shipments of soft coal from Pennsylvania and Ohio showed little change in 1929 as compared with 1909, while those from West Virginia to this market increased 352 per cent and those from Kentucky 868 times.

Year	Northern Roads Net Tons	Per Cent	Southern Roads Net Tons	Per Cent	Total Net Tons	Per Cent
1909	13,157,095	85.7	2,193,464	14.3	15,350,559	100.0
1914	15,400,813	72.0	5,982,804	28.0	21,383,617	100.0
1919	14,689,8,5	67.5	7,066,654	22.5	21,755,869	100.0
1924	9,797,679	42.6	13,183,369	57.4	22,981,048	100.0
1929	14,412,024	38.2	23,359,884	61.8	37,771,908	100.0

LAKE CARGO SHIPMENTS BY ORIGIN STATES (In Tons)

State	1909	1914	1919	1924	1929
Pennsylvania	8,055,489	10,639,735	7,079,835	4,281,625	7,774,443
Ohio	2,918,471	1,246,579	5,839,804	4,004,202	3,208,528
Maryland	39,428	35,961	8,642	5,146	3,178
West Virginia	4,329,322	8,602,515	7,387,422	11,120,270	19,560,660
Kentucky	7,849	858,827	1,425,466	3,514,355	6,814,482

Chart VII is a graphic presentation of Lake Cargo shipments by origin states.

CHART VII

LAKE CARGO SHIPMENTS
BY STATES OF ORIGIN
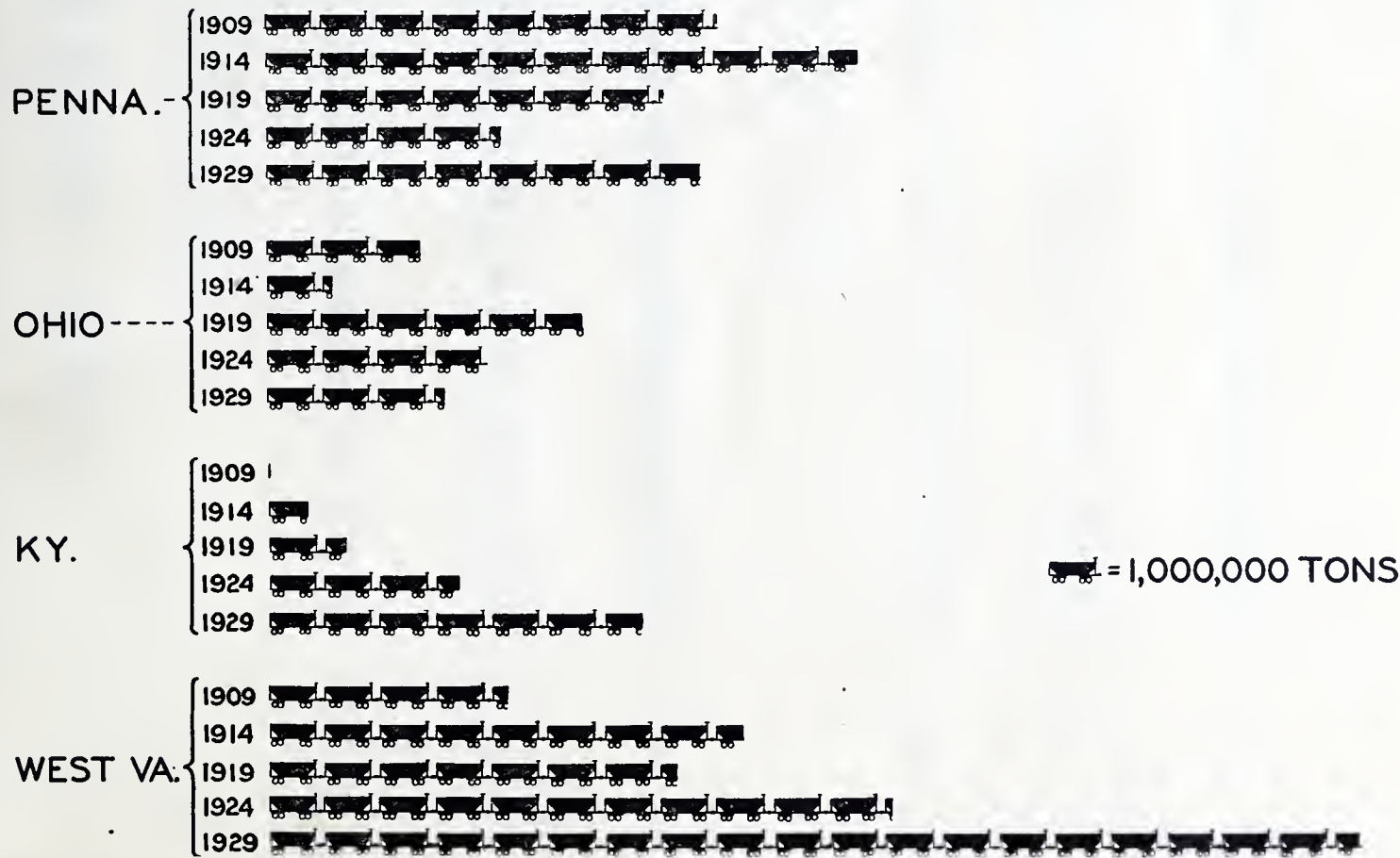
= 1,000,000 TONS

The shift that has been noted in the Central Freight Association area and, more markedly, in the Lake Cargo shipments, finds its counterpart in the shipments to the eastern seaboard. Soft coal tonnage shipped to tidewater via northern roads declined from 19.7 million tons in 1919 to 11.8 million tons in 1931, a drop of 40 per cent in 12 years. Meanwhile, tonnage shipments via southern roads to tidewater increased from 13.3 million tons in 1919 to 18.1 million tons in 1931, a growth of 36 per cent during the period. The southern roads' gain was the northern roads' loss. The changes in tonnage shipments to tidewater via northern and southern roads are shown by years since 1919 in Table 7.

The southern fields are also gaining in the New England markets at the expense of the north. Table 8 gives the change in shipments to New England via northern and southern lines for the 12 years, 1919-1930, inclusive. It shows that the percentage of total shipments by way of the northern roads from northern fields dropped from 71 per cent to 38 per cent during the period, while the tonnage from southern mines to tidewater increased from 29 per cent to 62 per cent of the total at the same time.
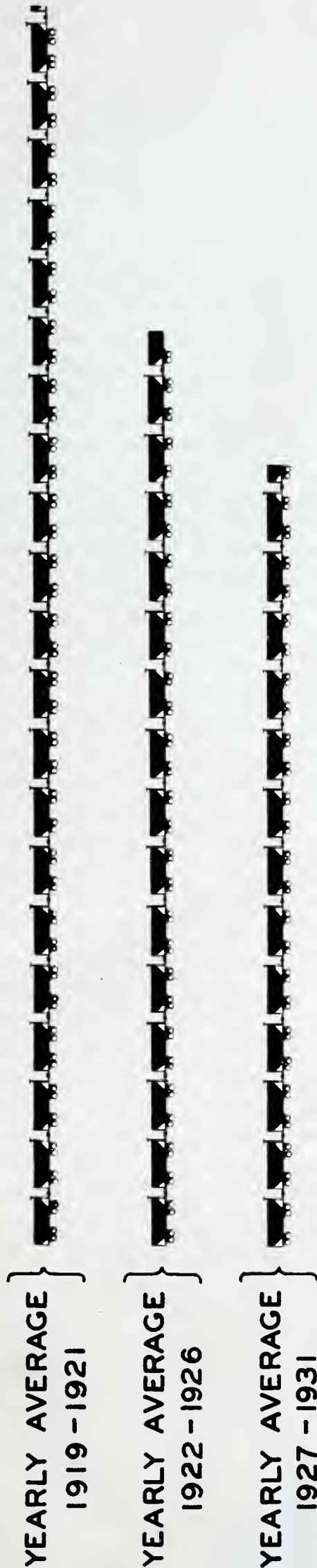
TABLE 7

TONNAGE SHIPPED TO TIDEWATER
1919-1931

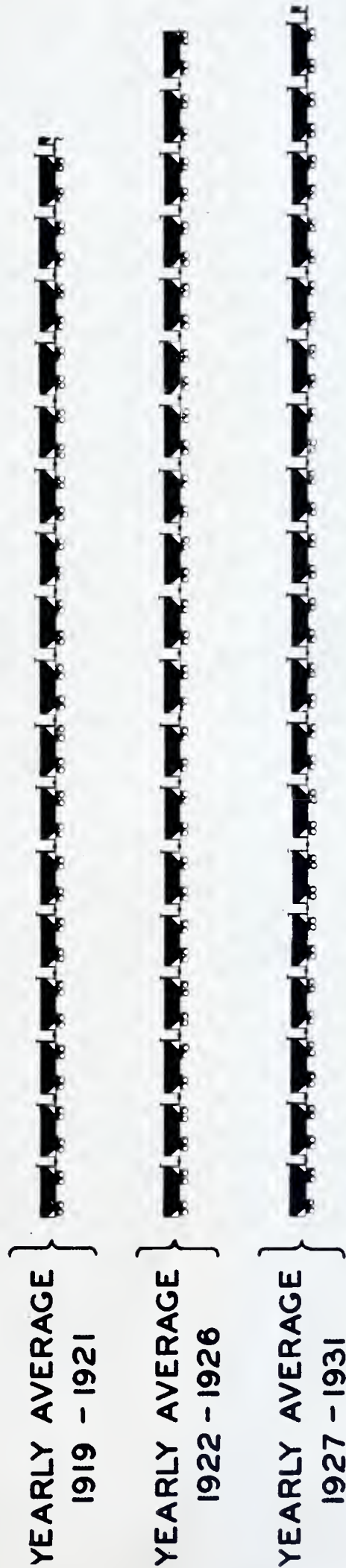| Year	Northern Roads New York Philadelphia and Baltimore (Gross Tons)	Southern Roads Hampton Roads (Gross Tons)
1919	19,743,227	13,347,684
1920	25,756,600	22,264,993
1921	17,579,759	15,744,450
1922	10,279,837	15,142,046
1923	17,643,088	15,857,366
1924	13,343,351	16,314,465
1925	14,078,953	19,067,242
1926	23,336,157	28,069,646
1927	14,041,399	19,743,075
1928	13,002,261	17,996,295
1929	13,853,197	20,120,827
1930	13,841,737	19,353,434
1931	11,795,578	18,102,436

Chart VIII shows the average yearly tonnage shipped to tidewater by northern and southern railroads for the periods, 1919-1921, 1922-1926, and 1927-1931.

CHART VIII

TIDE-WATER SHIPMENTS

NORTHERN ROADS

YEARLY AVERAGE
1919 – 1921

YEARLY AVERAGE
1922 – 1926

YEARLY AVERAGE
1927 – 1931

SOUTHERN ROADS

YEARLY AVERAGE
1919 – 1921

YEARLY AVERAGE
1922 – 1926

YEARLY AVERAGE
1927 – 1931

= 1,000,000 TONS

TABLE 8

TONNAGE AND PERCENTAGE OF COAL SHIPPED TO NEW ENGLAND VIA NORTHERN AND SOUTHERN LINES

1919-1931

(Net Tons)

Year	Via All Rail And Northern Ports	Percentage of Yearly Total	Via Hampton Roads And Charleston	Percentage of Yearly Total	Total Receipts
1919	12,929,000	71	5,253,000	29	18,182,000
1920	16,286,000	73	6,148,000	27	22,434,000
1921	11,170,000	65	6,018,000	35	17,188,000
1922	9,630,000	51	9,177,000	49	18,807,000
1923	14,013,000	59	9,671,000	41	23,684,000
1924	9,497,000	50	9,380,000	50	18,877,000
1925	10,107,000	47	11,206,000	53	21,313,000
1926	10,561,000	50	10,506,000	50	21,067,000
1927	9,750,000	44	12,590,000	56	22,340,000
1928	7,853,000	40	11,799,000	60	19,652,000
1929	8,436,000	40	12,875,000	60	21,311,000
1930	7,506,000	38	12,380,000	62	19,886,000
5 months 1931	3,132,000	39	4,926,000	61	8,058,000

Loss to Northern Railroads

This pronounced shift from northern mines and railroads to southern, which has been going on for upwards of 20 years, has had disastrous results not only for Pennsylvania operators and miners, but also for the railroads that serve the northern area and consequently for business in general in that area. It has meant large losses in freight revenue to these lines, and has been one of the influences which contribute to their present plight.

In the economic recovery of the bituminous coal industry in Pennsylvania, the railroads of the north have, therefore, a vital stake. The part played by freight rates on soft coal, and the ways in which freight-rate adjustment would affect the coal industry of this state, will be described in the second bulletin of this series.

TONNAGE AND
   SHIPPED T
   NORTHERN

Year	Via All Rail And Northern Ports	Percent of Yea Tota
1919	12,929,000	71
1920	16,286,000	73
1921	11,170,000	65
1922	9,630,000	51
1923	14,013,000	59
1924	9,497,000	50
1925	10,107,000	47
1926	10,561,000	50
1927	9,750,000	44
1928	7,853,000	40
1929	8,436,000	40
1930	7,506,000	38
5 months		
1931	3,132,000	39